

CLAIMS

What is claimed is:

1. In drive line system for agricultural equipment, said system comprising:
 - A. A power input shaft;
 - 5 B. A power output shaft coupled to said power input shaft;
 - C. Agricultural machinery coupled to said power output shaft and driven by said power output shaft;
 - D. A gearbox and clutch system disposed between said power input shaft and power output shaft, said clutch system having,
 - E. A gear mechanism;
 - F. A clutch mechanism coupled to said gear mechanism;
 - G. An enclosure enclosing said clutch mechanism; and
 - H. A lubricant disposed within said clutch mechanism.
2. The system of claim 1, wherein said lubricant substantially fills said enclosure.
- 15 3. The system of claim 1, wherein said enclosure is sealed.
4. The system of claim 1, further comprising an enclosure around the gear mechanism.
5. The system of claim 1, wherein said enclosure encloses the gear mechanism and the clutch mechanism.
- 20 6. The system of claim 1, wherein said gear mechanism comprises a gear input shaft, a gear output shaft and gears coupling said gear input shaft to said gear output shaft.
7. The system of claim 6, wherein said clutch mechanism comprises a clutch output shaft axially aligned with said gear output shaft, a drive plate disposed on said gear output

shaft, a pressure plate disposed on said clutch output shaft adjacent said drive plate, and a biasing element urging said drive plate and said pressure plate into contact with one another.

8. The system of claim 7, wherein said gear input shaft and said gear output shaft are axially offset from one another.

5 9. A combined gearbox and clutch system for the drive line of agricultural equipment, said gearbox and clutch system comprising:

- A. A gear mechanism;
- B. A clutch mechanism coupled to said gear mechanism;
- C. A clutch enclosure enclosing said clutch mechanism; and
- D. A lubricant disposed within said enclosure.

10 10. The system of claim 9, wherein said lubricant substantially fills said clutch enclosure.

11. The system of claim 9, wherein said clutch enclosure is sealed.

12. The system of claim 9, further comprising an gear enclosure around the gear mechanism.

15 13. The system of claim 9, wherein said clutch enclosure encloses the gear mechanism and the clutch mechanism.

14. The system of claim 9, wherein said gear mechanism comprises a gear input shaft, a gear output shaft and gears coupling said gear input shaft to said gear output shaft.

20 15. The system of claim 9, wherein said clutch mechanism comprises a clutch output shaft axially aligned with a clutch input shaft, a drive plate disposed on said clutch input shaft, a pressure plate disposed on said clutch output shaft adjacent said drive plate, and a biasing element urging said drive plate and said pressure plate into contact with one another.

16. The system of claim 9, wherein said lubricant is oil.

17. The system of claim 9 wherein said clutch enclosure encloses the gear mechanism.
18. The system of claim 17, wherein said clutch enclosure defines separate compartments around the gear mechanism and the clutch mechanism.
19. The system of claim 18 wherein said enclosure compartments are sealed from one another.
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20. The system of claim 9 wherein said lubricant surrounds said clutch mechanism.
21. The system of claim 9 wherein said lubricant surrounds said clutch mechanism and said gear mechanism.
22. The system of claim 17, wherein said lubricant surrounds said clutch mechanism.
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23. The system of claim 19, wherein a lubricant is disposed in each compartment.
24. The system of claim 18, wherein said compartments are in fluid communication with one another.
25. The system of claim 2 wherein the gear mechanism is a right angle gearbox.
26. The system of claim 9, wherein the gear mechanism is a right angle gearbox.
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27. The system of claim 9, further comprising a gear enclosure enclosing said gear mechanism, wherein said clutch enclosure is attached to said gear enclosure.
28. A combined gearbox and clutch system for the drive line of agricultural equipment, said gearbox and clutch system comprising:
- A. A gearbox;
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- B. A mechanical, non-electrical clutch coupled to said gearbox,
- C. A clutch enclosure enclosing said mechanical clutch; and
- D. A machinery oil bath disposed within said enclosure and surrounding said mechanical clutch,

E. Said mechanical clutch comprising a clutch input shaft axially aligned with a clutch output shaft, a drive plate disposed on said clutch input shaft, a pressure plate disposed on said clutch output shaft adjacent said drive plate, and a biasing element urging said drive plate and said pressure plate into contact with one another, wherein said oil bath is in contact with drive plate, pressure plate and biasing element.